

# DESIGNING A SUSTAINABLE LANDSCAPE WORKSHOP SERIES



## Workshop 3: Maintenance

# DESIGNING A SUSTAINABLE LANDSCAPE

## Workshop 1: Designing Your Space

Thurs, Sept 19  
5:00-8:00pm

Concord-Carlisle  
High School

## Workshop 2: Constructing Your Project

Tues, Oct 8  
9:00-11:00am

Concord  
Police/Fire Station

## Workshop 3: Maintaining Your Yard

Sat, Oct 26  
9:00-11:00am

Harvey Wheeler  
Community Center

# INTRODUCTIONS

## Town of Concord

Kate Hanley, Director of Sustainability

Melissa Simoncini, Sr. Environmental and Regulatory Coordinator

Delia Kaye, Natural Resources Director

## Parterre Ecological Services

Miles Connors, MALD, Director

## Kim Lundgren Associates

Angela Cleveland, AICP, Director of Sustainability Planning



# THE TOWN OF CONCORD

- Grant from the State
- Importance of Sustainability
- Water Conservation
- Building Community



**Edible Gardens**



**Rain Gardens**



**Lawn Alternatives**



# SUSTAINABLE MAINTENANCE PRACTICES





# Consider Community

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## RED MAPLE WETLAND RESTORATION PLANTING



Red Maple,  
*Acer rubrum*



Highbush Blueberry,  
*Vaccinium corymbosum*



Winterberry,  
*Ilex verticillata*



Sweet Pepperbush,  
*Clethra alnifolia*



Swamp Azalea  
*Rhododendron viscosum*



Blue Flag Iris  
*Iris versicolor*



Spicebush,  
*Lindera benzoin*



Ostrich Fern,  
*Matteuccia struthiopteris*

# Consider Water Regime

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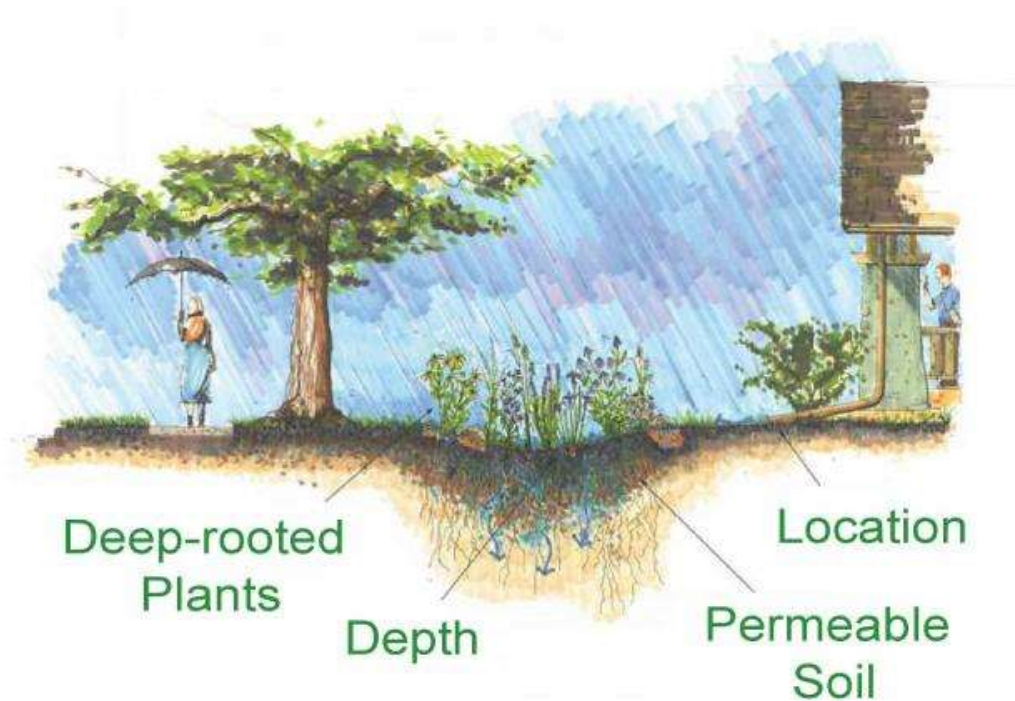
- Understand, protect, and restore any natural water system
- Irrigate intelligently, deeply and sparingly
- Reduce and treat stormwater runoff volume, flow rate and temperature of water
- Provide increased wildlife habitat
- Enhance the beauty of residential property
- Collect and conserve water





# Rain Garden

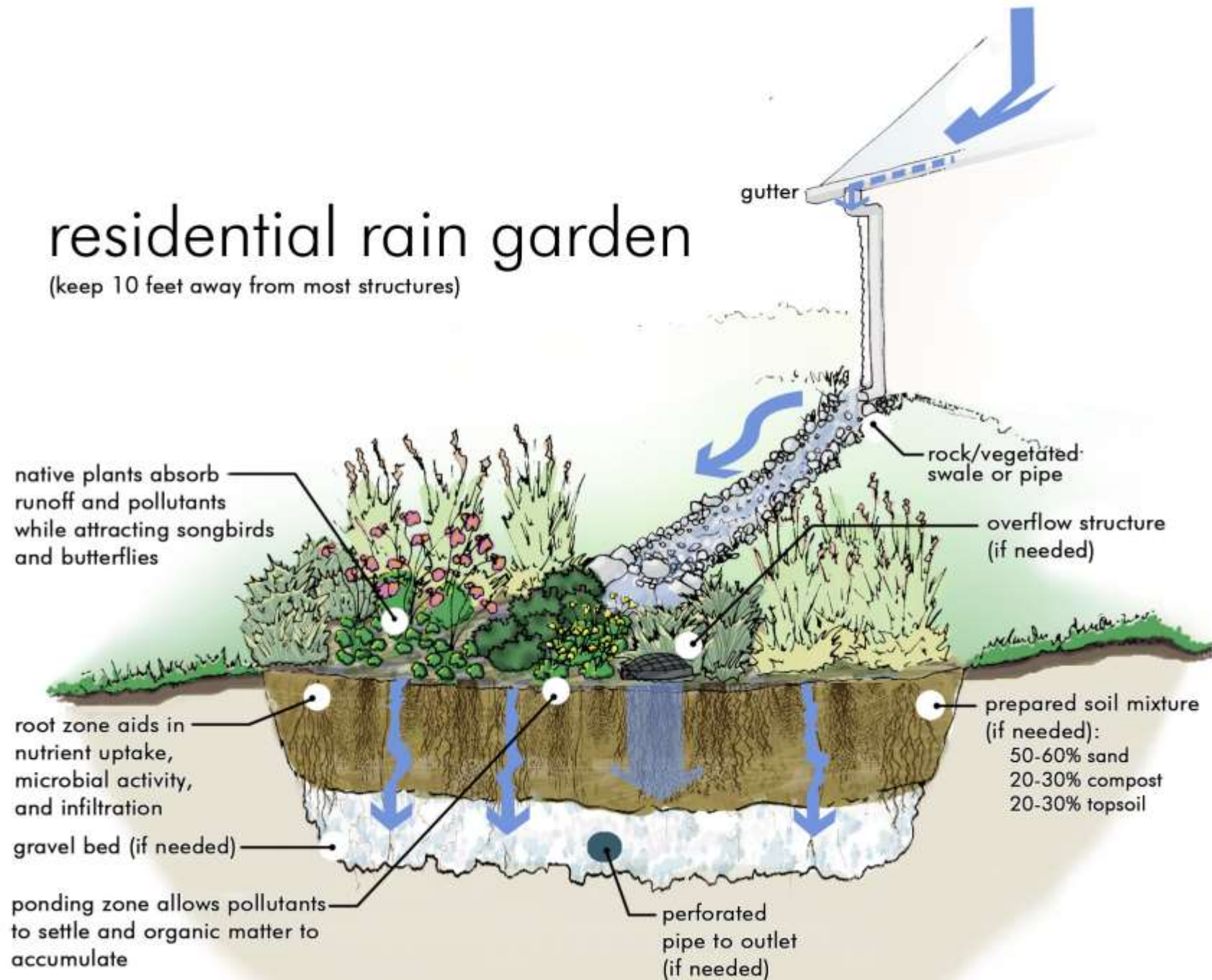
- Rain Gardens are depressions in the landscape designed to capture and infiltrate storm water in permeable soils
- Rain Gardens are designed to reduce the amount of storm water runoff that carry pollutants into streams and rivers
- Rain Gardens are designed with deep rooted native plants well adapted to the unique conditions they present





# residential rain garden

(keep 10 feet away from most structures)

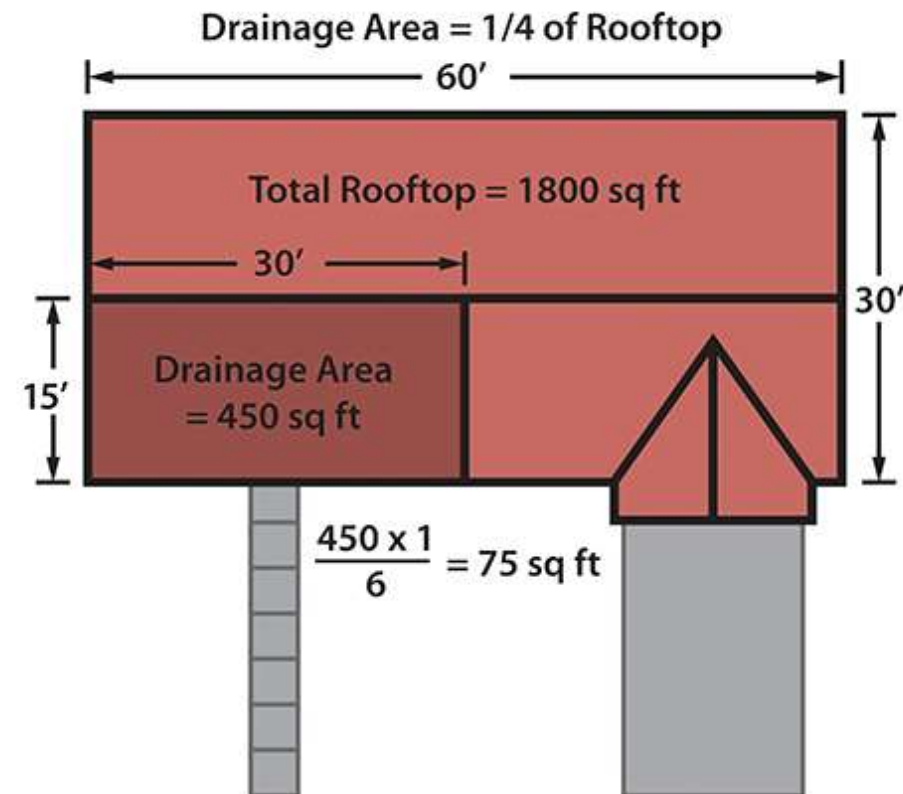




# Quick Calculation

Calculate the square footage of impervious area: rooftop, driveway, patio, walkway, compacted lawn areas

1. Calculate the total impervious surface area draining to rain garden by multiplying width by length.
2. Multiply the area by the amount of average rainfall (lets assume 1").
3. Divide by the depth of the rain garden (typically 6").





# Consider Alternative to Lawn Care

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- The loss of available nutrients is why imported chemical fertilizers are required
- Mulch lawn clippings, leaves and spread compost in the fall
- Plant lawn alternatives or diversify perennial layer

























# Consider Alternative Maintenance Methods

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- Leave native wildflower seed heads
- Collect native seed
- Divide and transplant
- Prune
- Sheet mulch to reduce weeds
- Plant additional native trees, shrubs and perennials













Asclepias  
incarnata

































# WATERING CHALLENGES





# The Water Challenge

- Do more with less
- Plan for the future
- Make it easy
- Make it free





# The Water Challenge

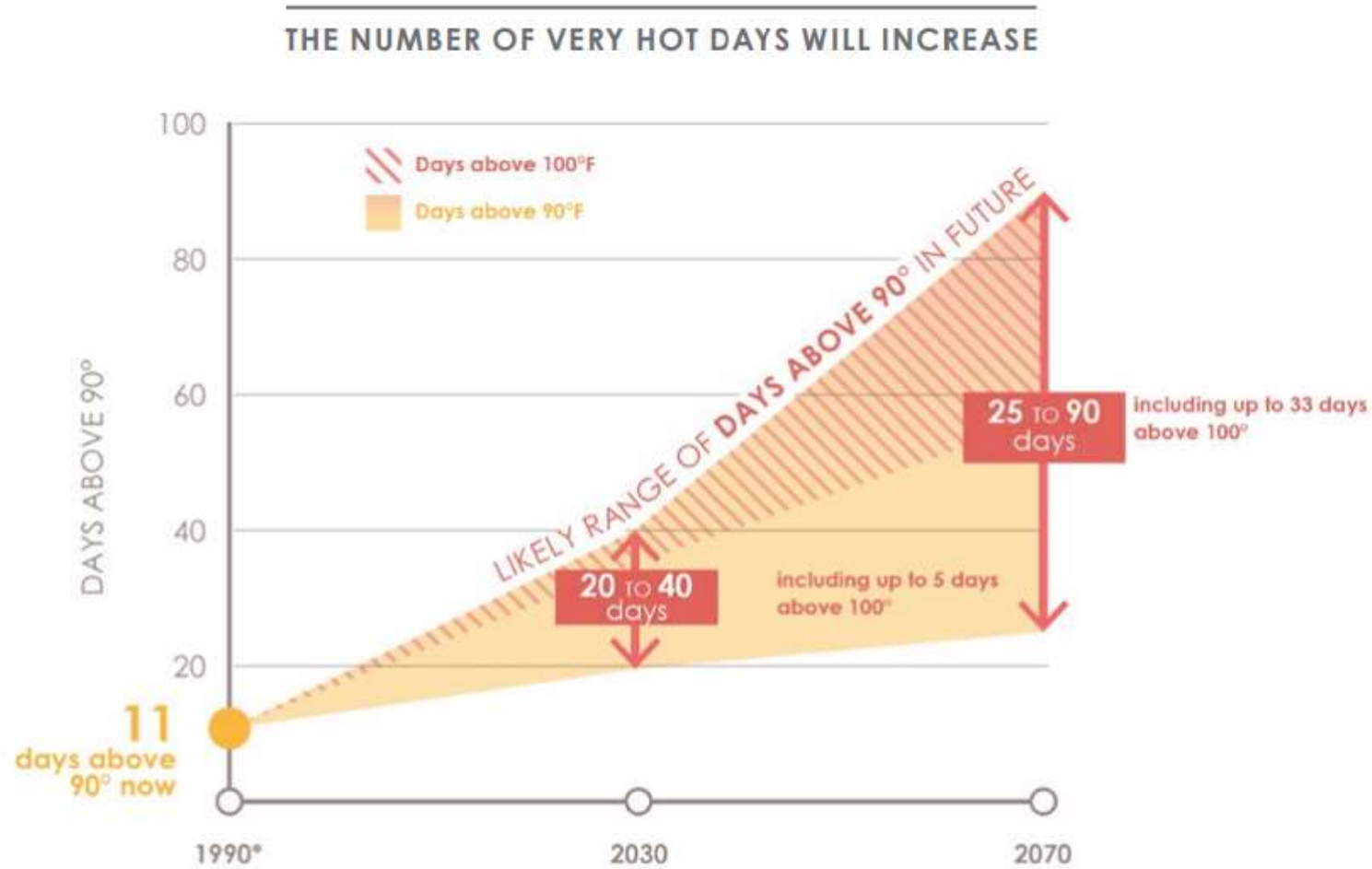
- Do more with less
- Plan for the future
- Make it easy
- Make it free

Do it all while having fun!





# More Hot Days

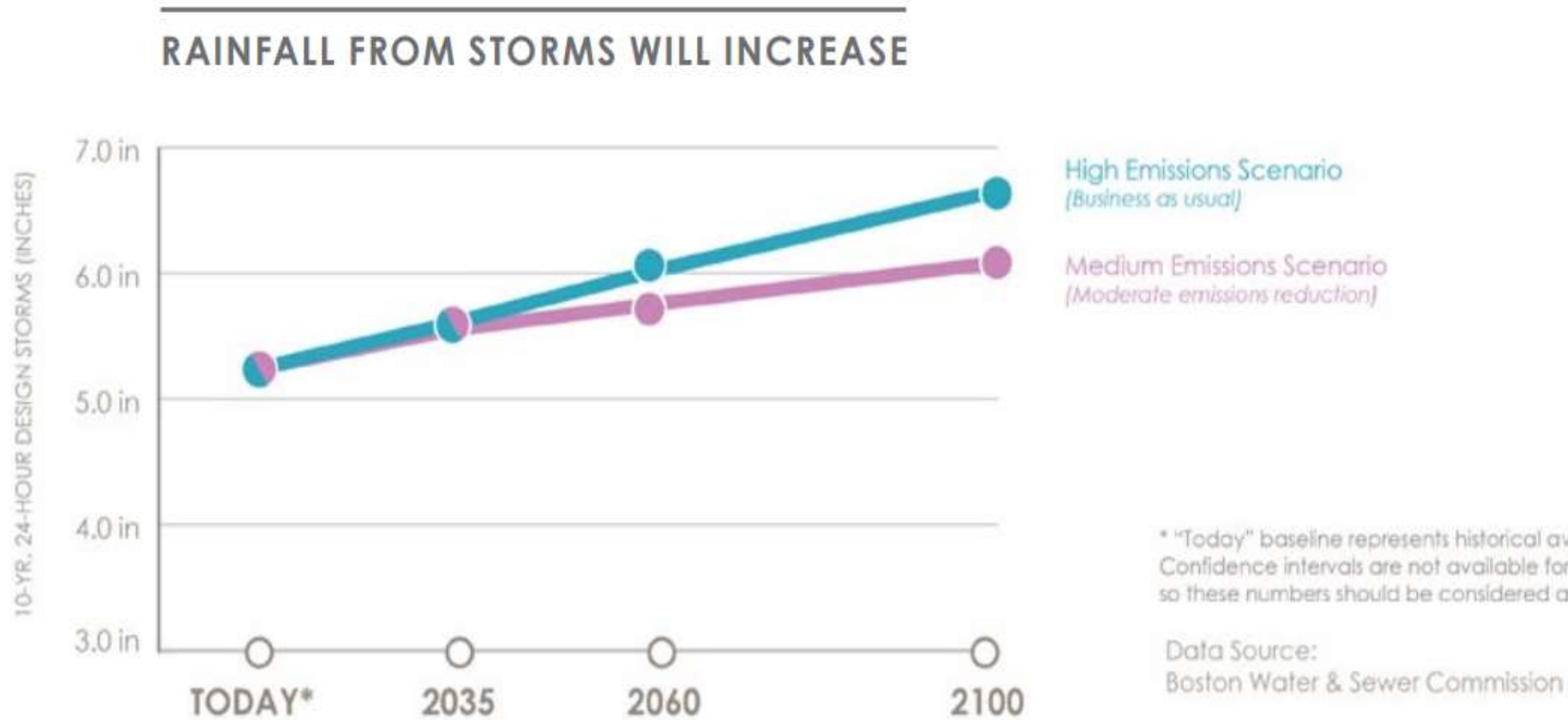


Data source: Rossi et al. 2015

\* Baseline represents historical average from 1971-2000  
Upper values from high emissions scenario. Lower values from low emissions scenario.

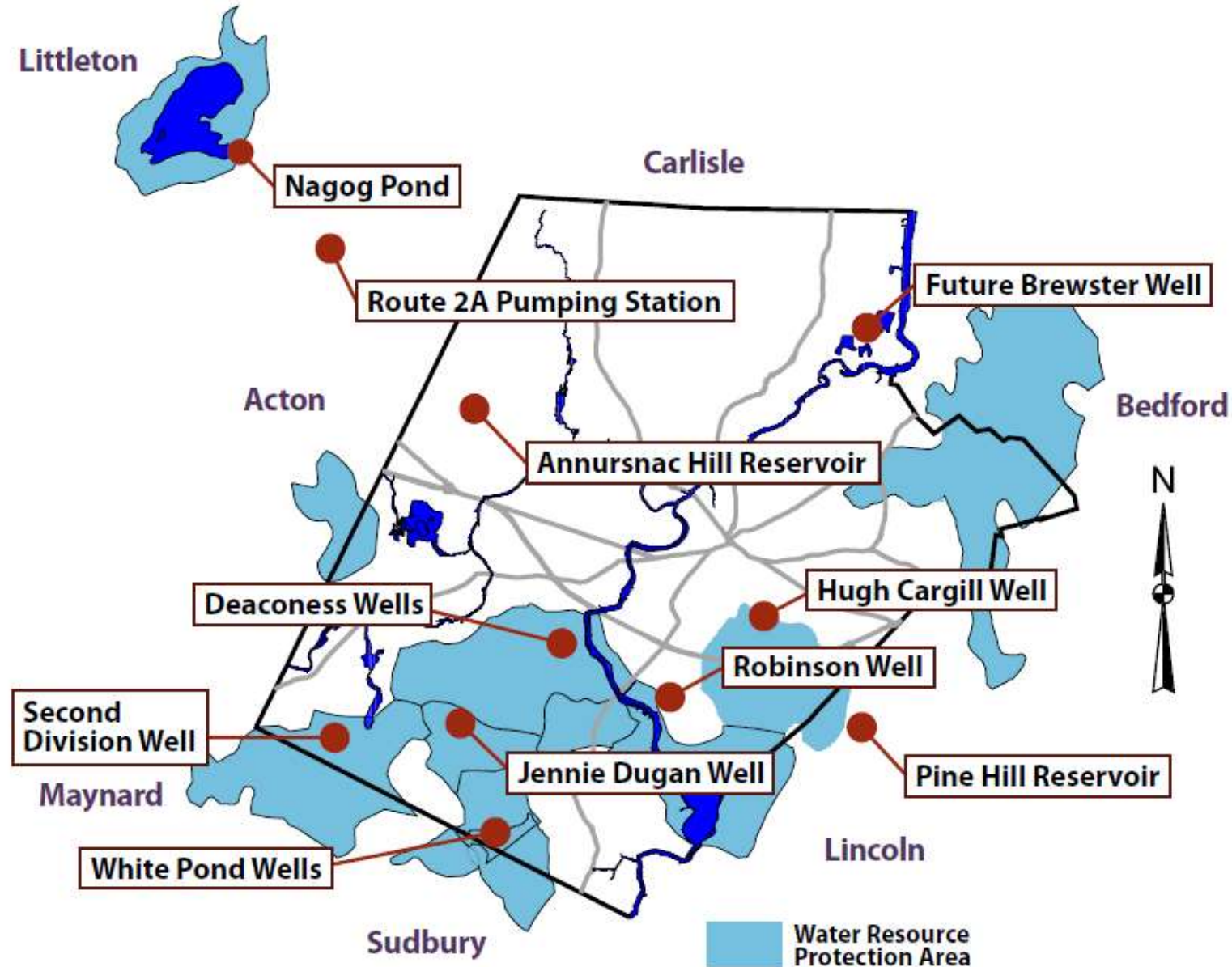


# More Rain, Less Often





# Water Withdrawal Permit & Registration





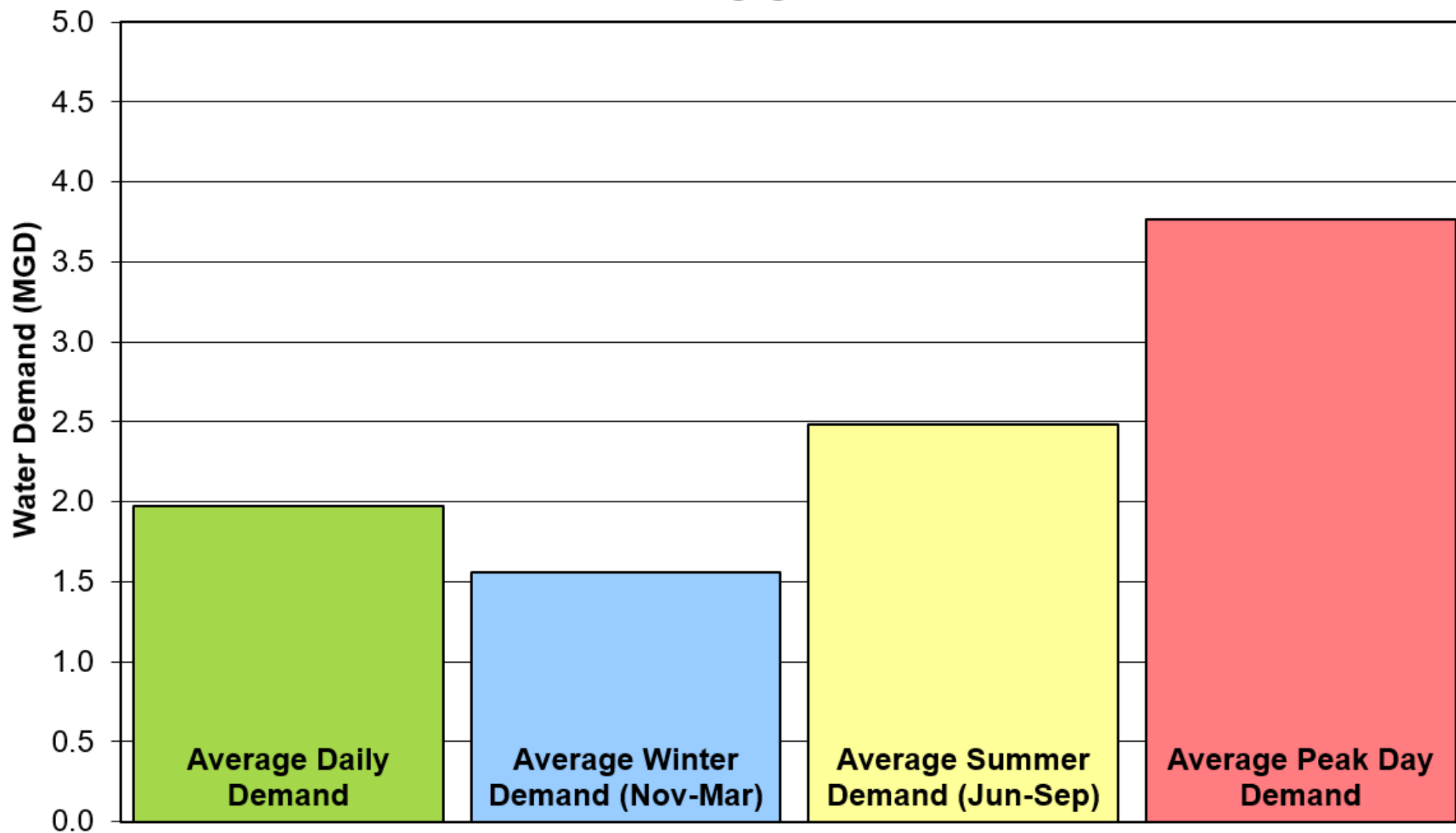
# DID YOU KNOW?

Customers with in-ground irrigation systems use, on average, 2.5 times more water than customers without.





**Pumping Capacity and Seasonal Water Demand Summary**  
2008/2009- 2017/2018  
With Nagog Pond

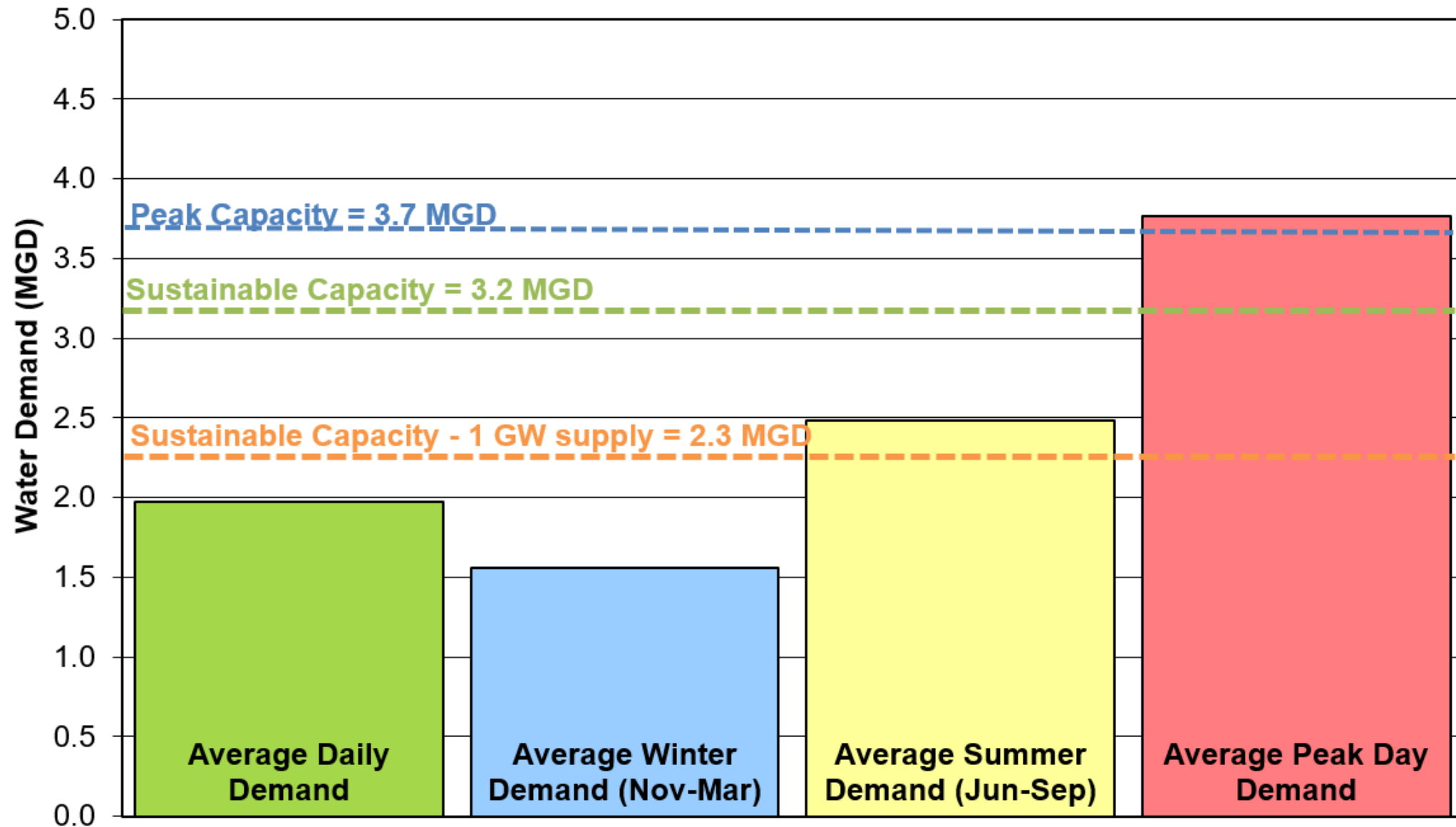




# Pumping Capacity and Seasonal Water Demand Summary

2008/2009- 2017/2018

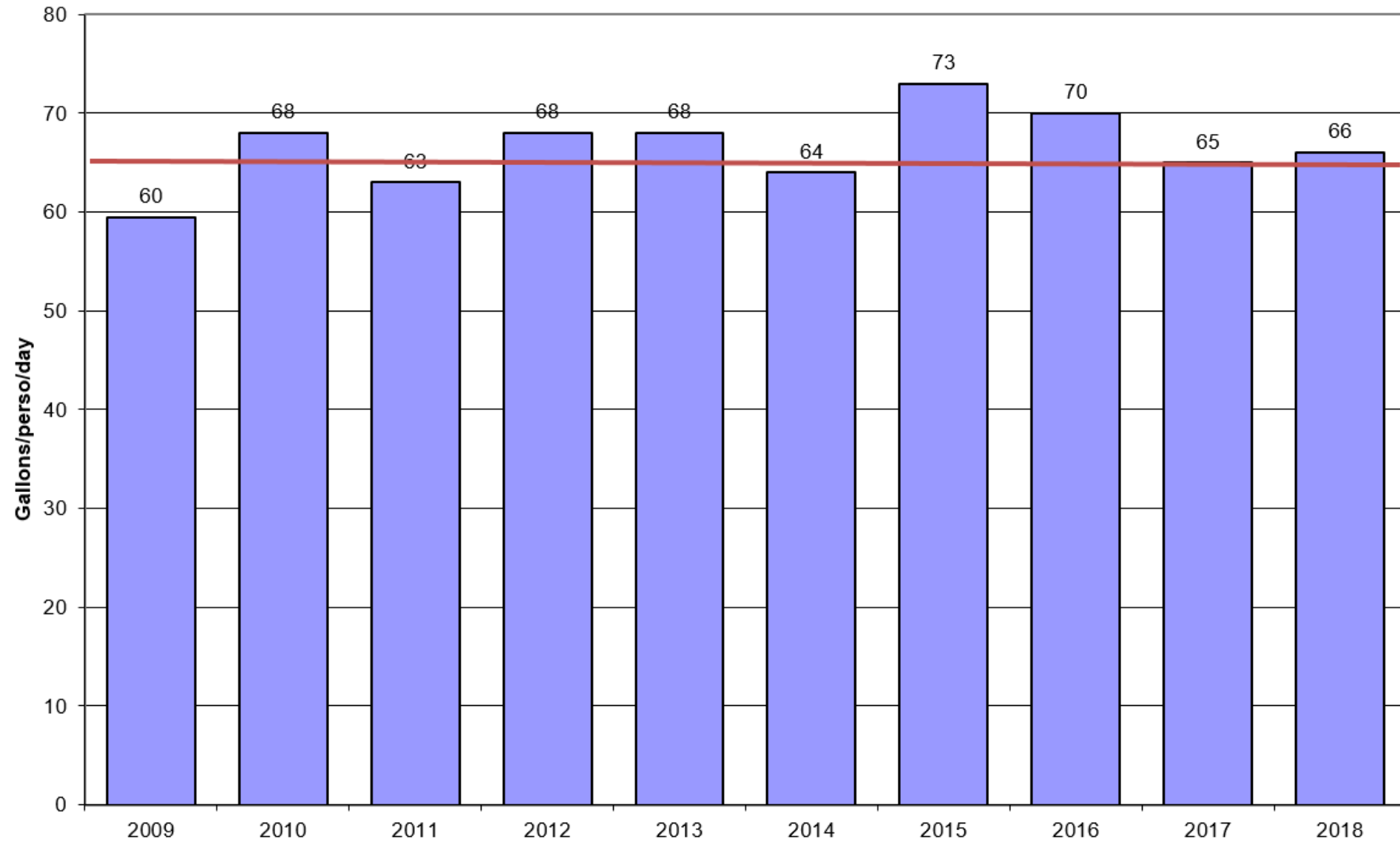
With Nagog Pond





## Residential Gallons per Capita per Day Consumption (RGPCD)

Concord 3067000







## Seasonal Water Demand Management Plan

		Seasonal Water Conservation Advisory	Lawn Watering Restriction	Lawn Watering Ban
		Best Management Practices	State of Water Supply Conservation Declaration by Public Works Commission  Water Use Restriction Bylaw §4	
Outdoor Water Use Activities	Lawn & Turf Watering In-ground Irrigation Systems & Sprinklers	Recommended * 1 day or 1-inch per week <a href="http://www.concordma.gov/wateringday">www.concordma.gov/wateringday</a>	Restricted ** 1 Day per Week Water Before 9AM or After 5PM <a href="http://www.concordma.gov/wateringday">www.concordma.gov/wateringday</a>	Prohibited **
	Lawn & Turf Watering Hand-Held Watering & Drip Irrigation Systems	OK	Restricted ** Water Before 9AM or After 5PM <i>Handheld Watering only with an automatic shut off device</i>	Prohibited **
	Flower Beds, Shrubs, Trees & Veg. Gardens	OK	OK	
	Private Residential Swimming Pools	OK Filling or Topping Off	Restricted ** Topping Off Only	
	Washing Vehicle/Boat at home	OK Washing Vehicles at home with an automatic shutoff hose or bucket	Restricted ** Washing Vehicles at home with an automatic shutoff hose or bucket	
	Ornamental Fountains	OK	Restricted ** Recirculating Water Only	
	Pressure Washing	OK	Restricted ** <i>Pressure Washing</i> - Spray nozzles should not use more than 3.5 gallons per minute <i>Hose</i> - The washing or cleaning of streets, driveways, sidewalks or other impervious areas is prohibited (Exception for health, sanitation and medical purposes)	

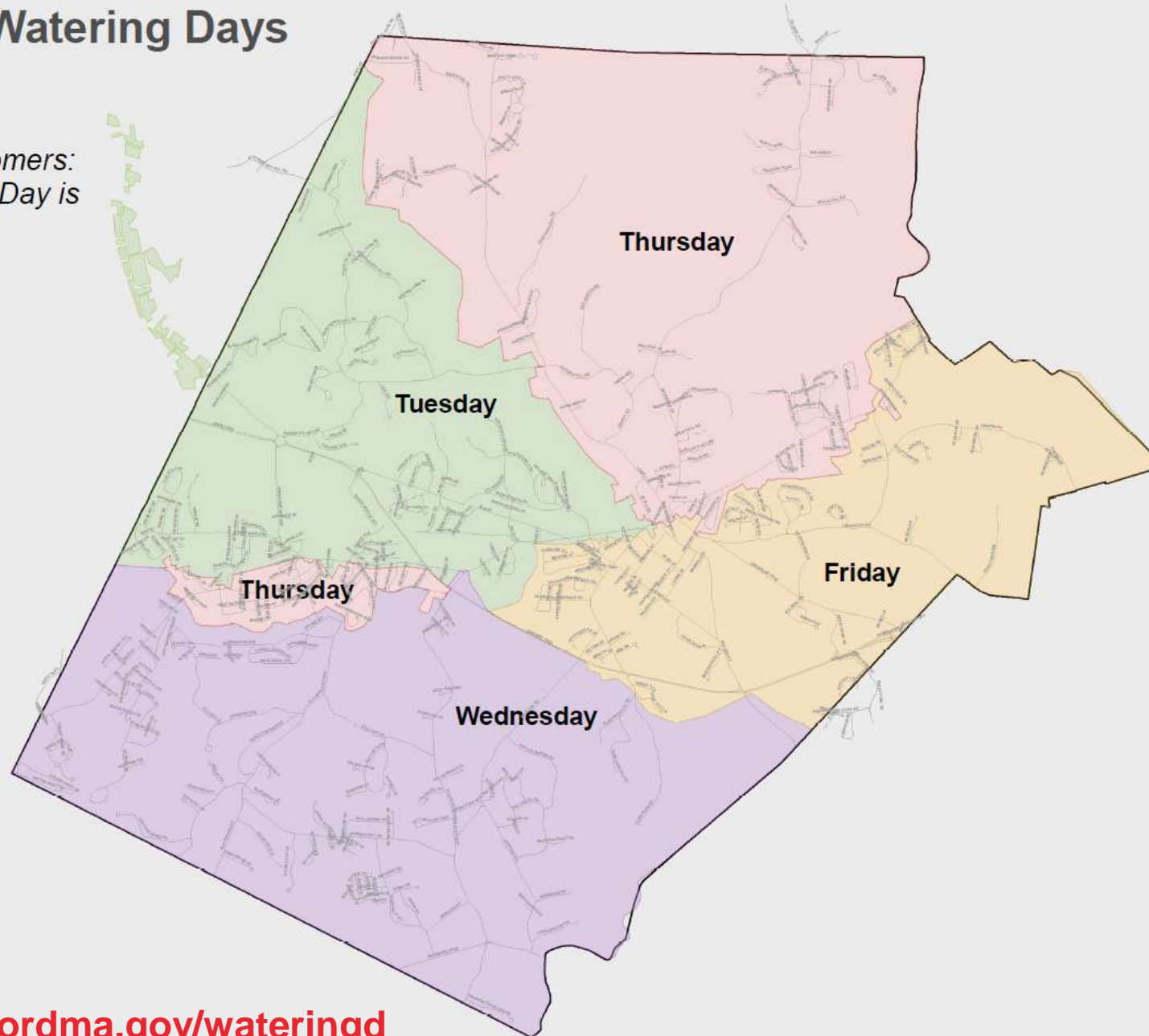
\* Unless otherwise advised by qualified lawn care specialist.

\*\* Enforceable with fines (\$50 - 1st offense, \$100 - subsequent offenses)



# Concord Watering Days

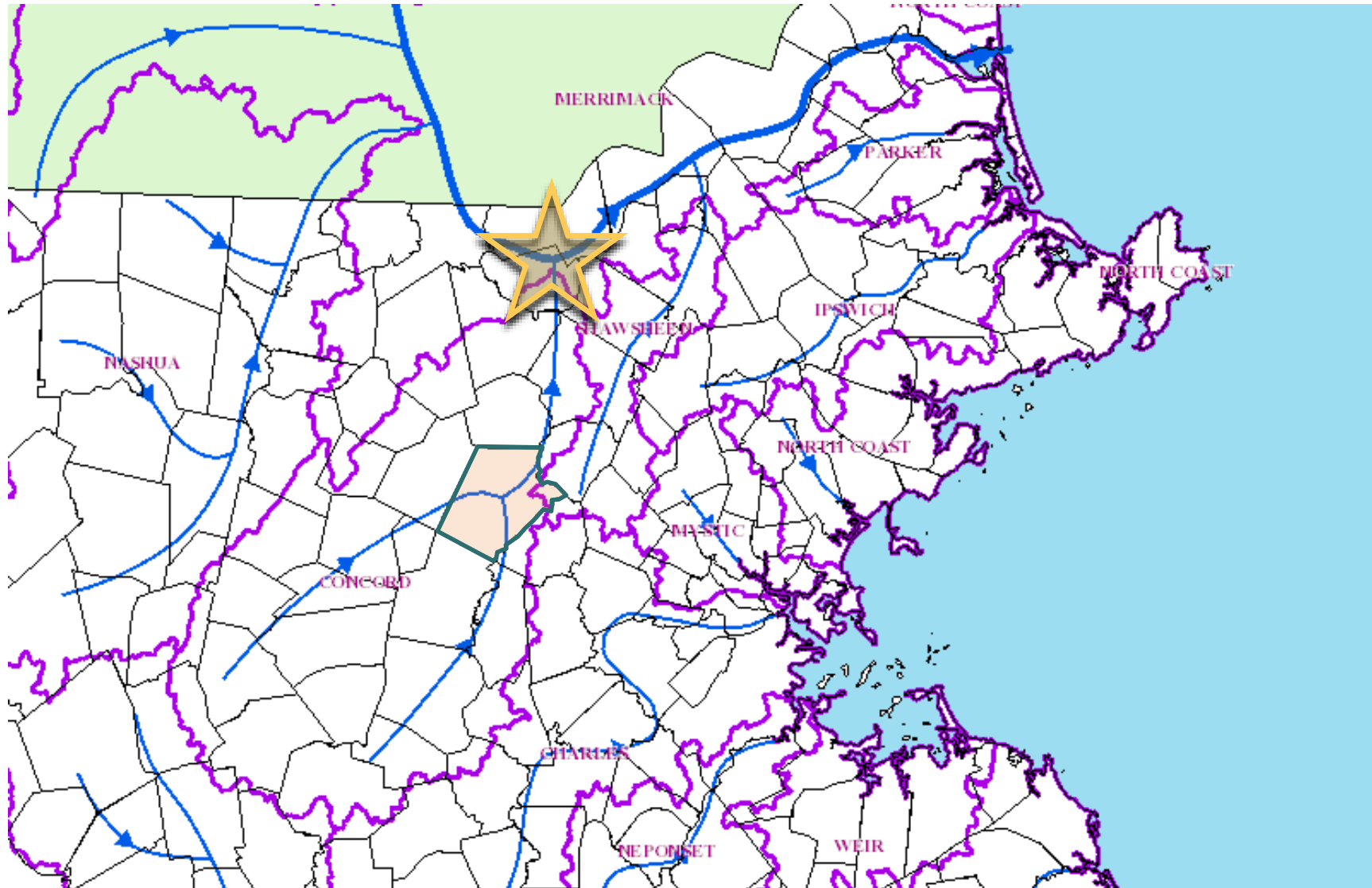
*All Acton customers:  
Your Watering Day is  
Tuesday*



[www.concordma.gov/wateringday](http://www.concordma.gov/wateringday)



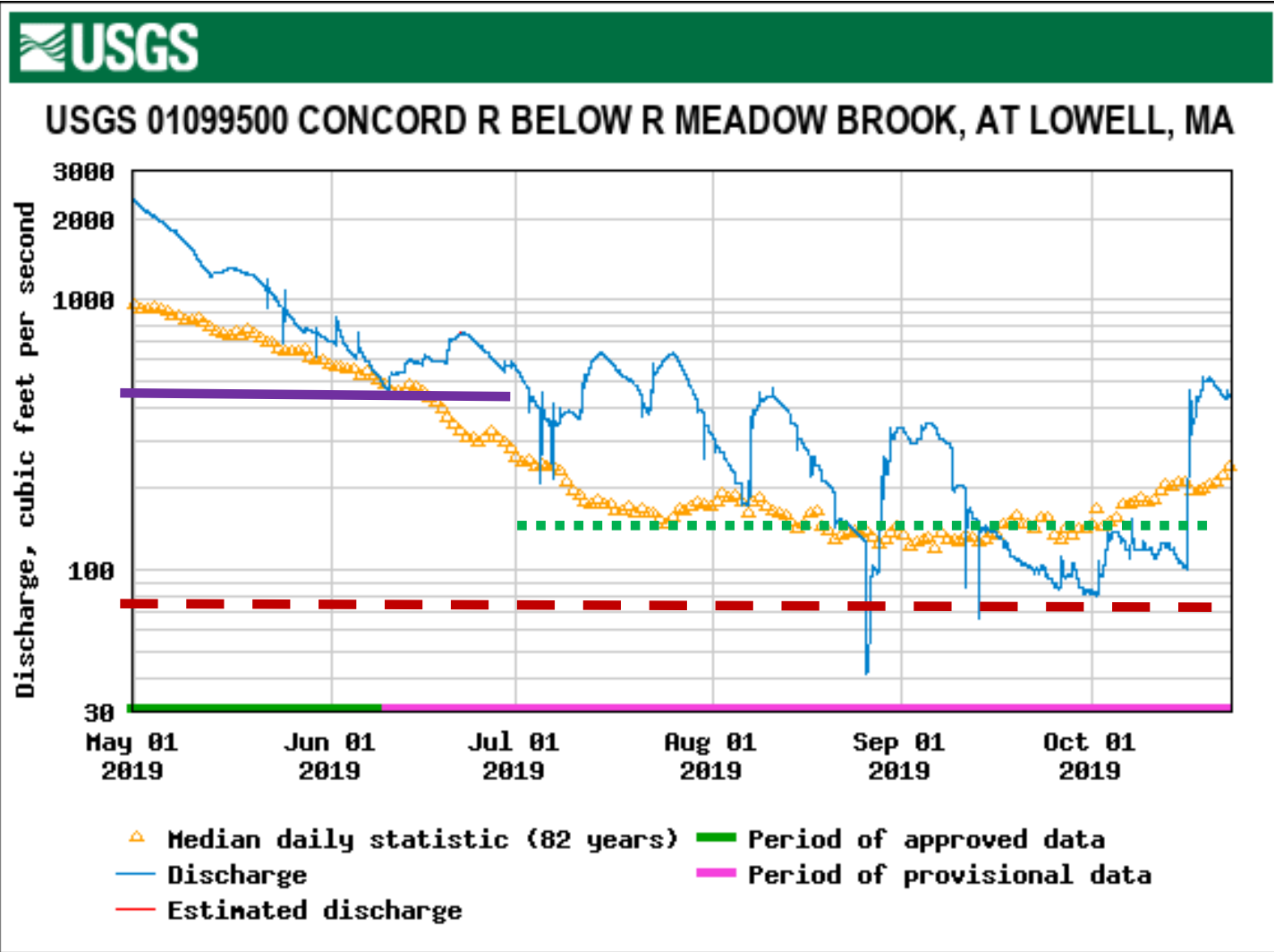
# Stream Gauge





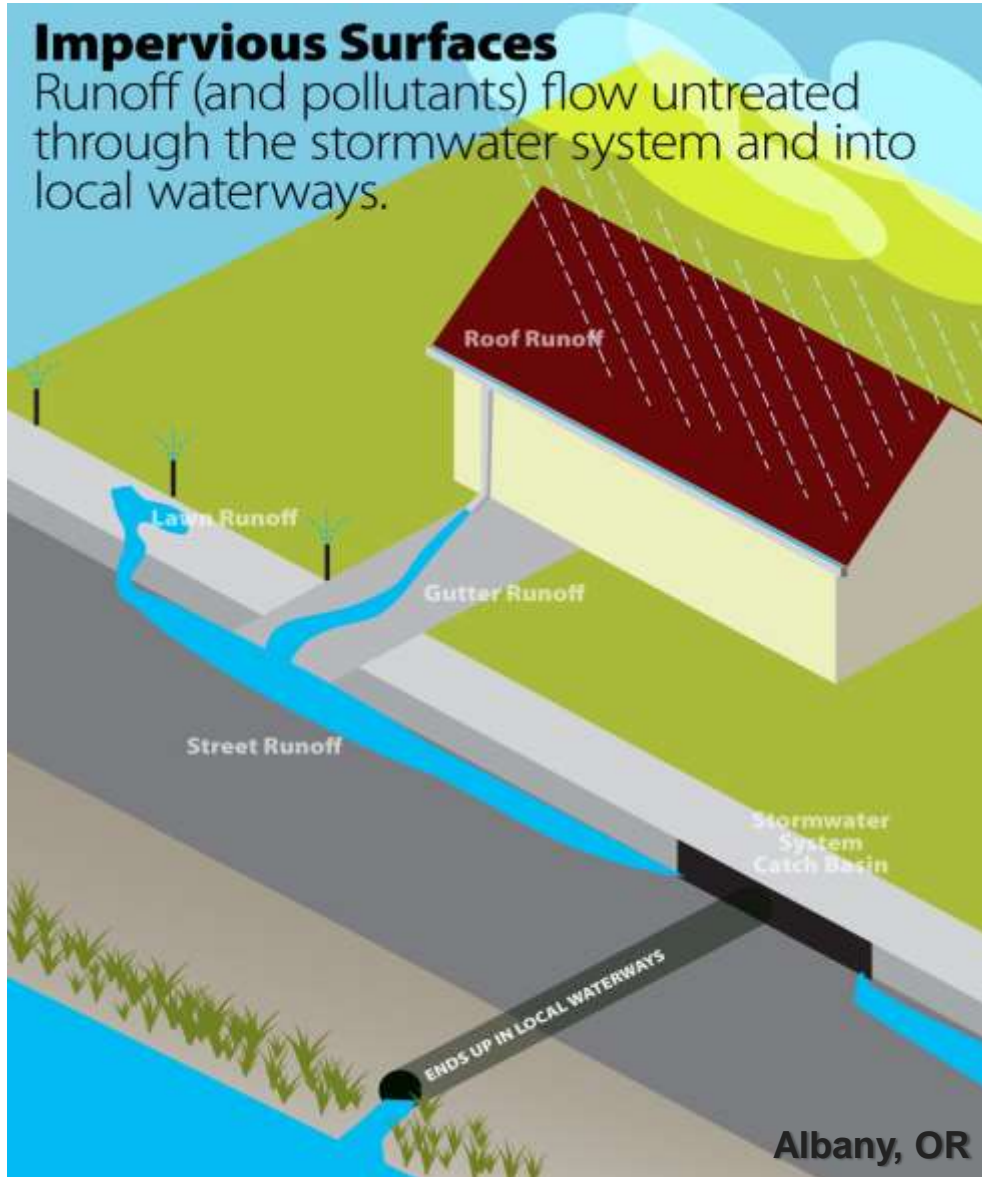
# Stream Gauge

Non-essential Outdoor Water Use Streamflow Trigger Information May 1 through Sept 30			
USGS Gage 01099500 - Concord River below River Meadow Brook, at Lowell			
Time Period	May - June	July - Sept	7 Day Low Flow
Trigger Value	<u>427</u>	<u>156</u>	<u>71</u>





# Slow the Flow



Onsite groundwater recharge is now required for new development



# Know your Home

## 1. Check you Soil

- Root Depth
- Soil Depth
- Soil Material

## 2. Do the math

- 1-inch per week
- 625 gallons per 1000 square feet

## 3. Collect the Water





# Irrigation





# Drip Irrigation





# Drip Irrigation





# Micro-Drip Irrigation





# Design for the Future

## Near Future

Changing Weather

Changing Landscapes

Increasing Restrictions

## Next Decades

Increasing drought  
frequency/severity





# Design for the Future

## Near Future

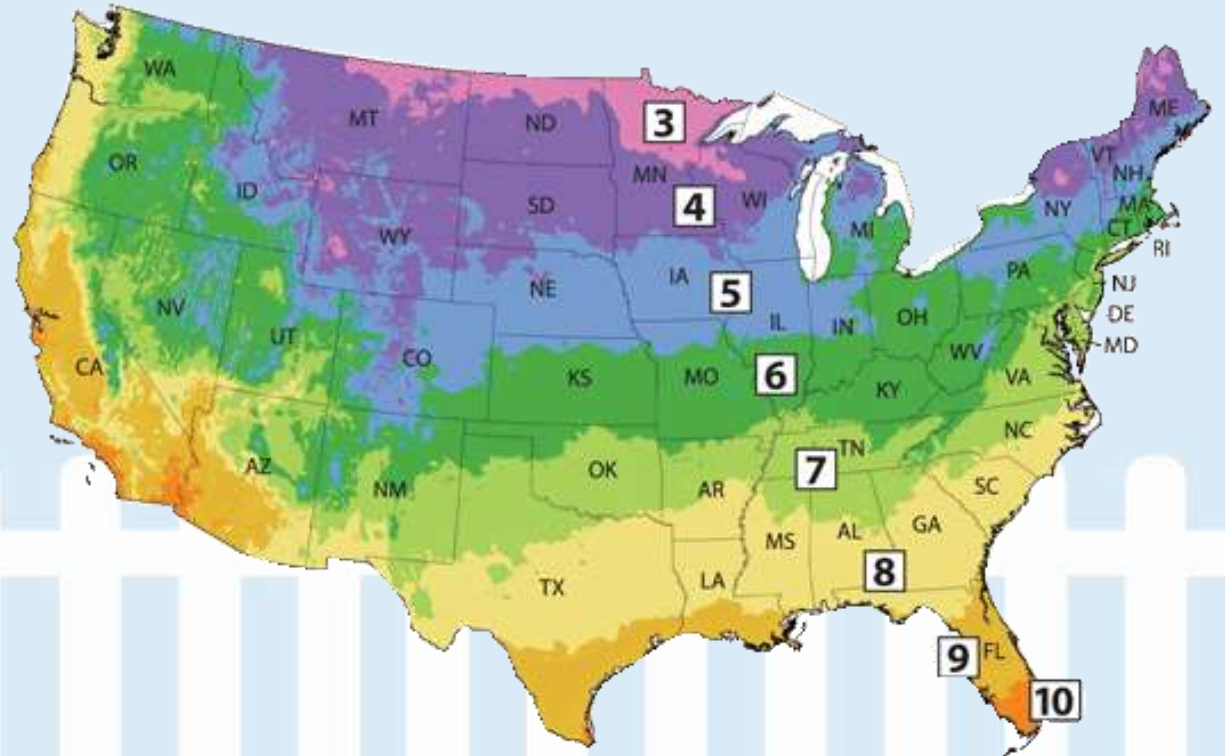
Changing Weather

Changing Landscapes

Increasing Restrictions

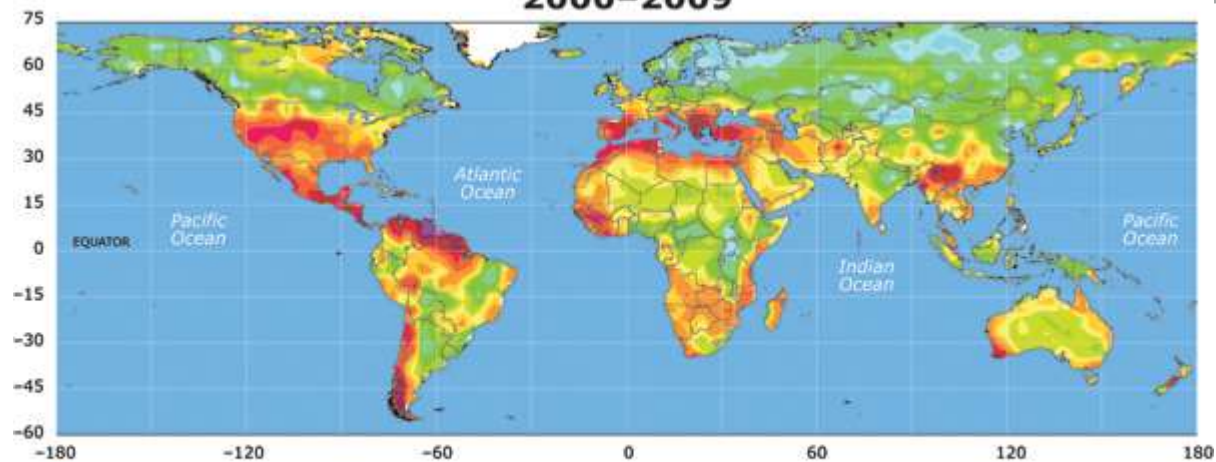
## Next Decades

Increasing drought  
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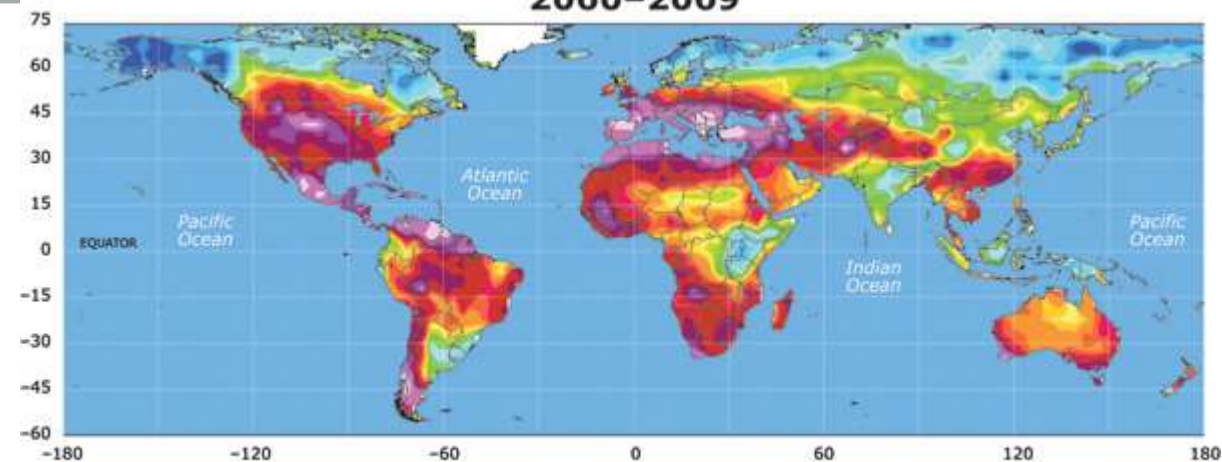




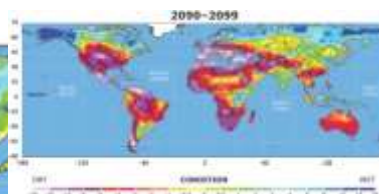
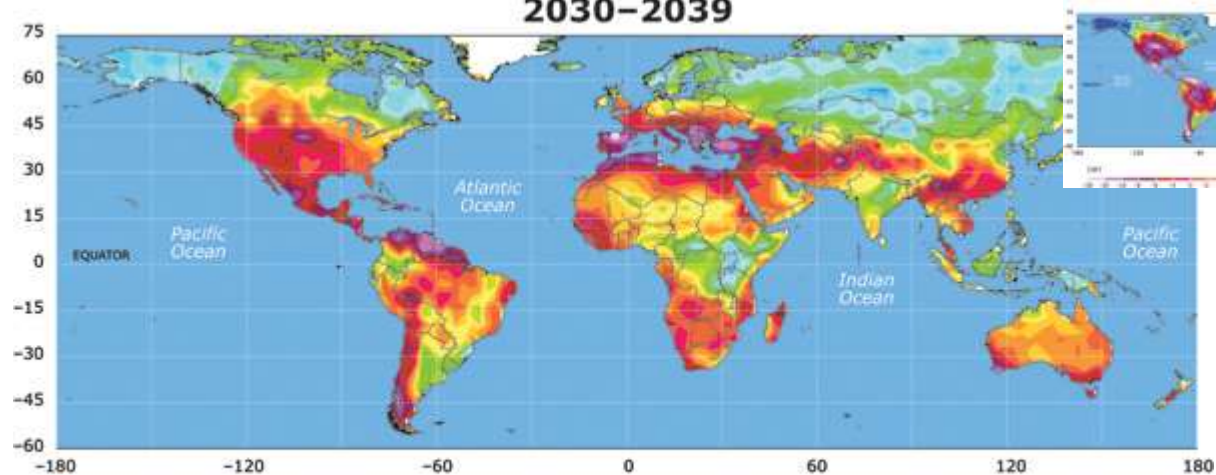
**2000–2009**



**2060–2069**



**2030–2039**

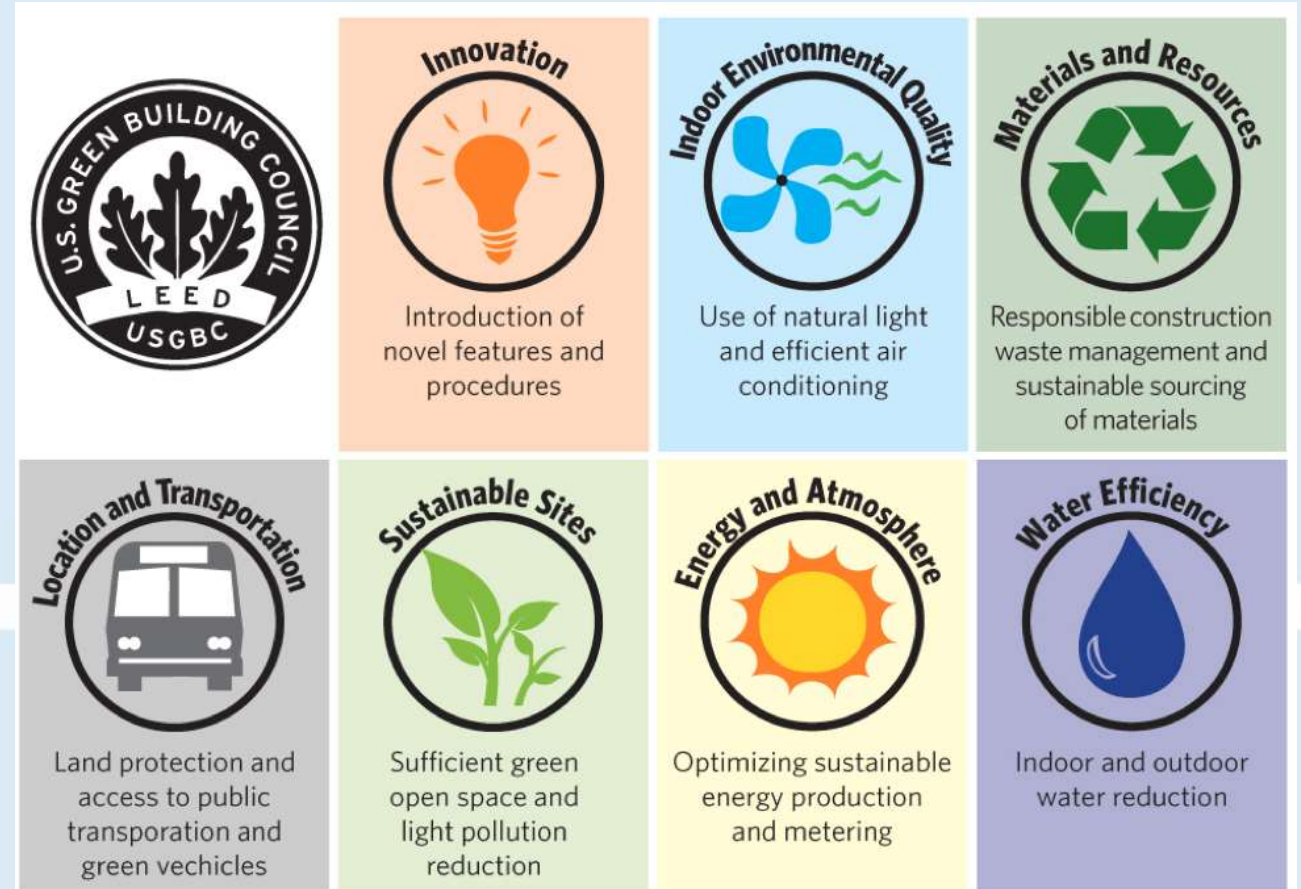




# There is no water stretch code

## Existing Programs

- Town Bylaws
- LEED
  - More than energy
- EPA WaterSense
  - Certified Landscapes
  - Certified Homes
- Green Infrastructure
  - Mitigation
  - Natural Systems

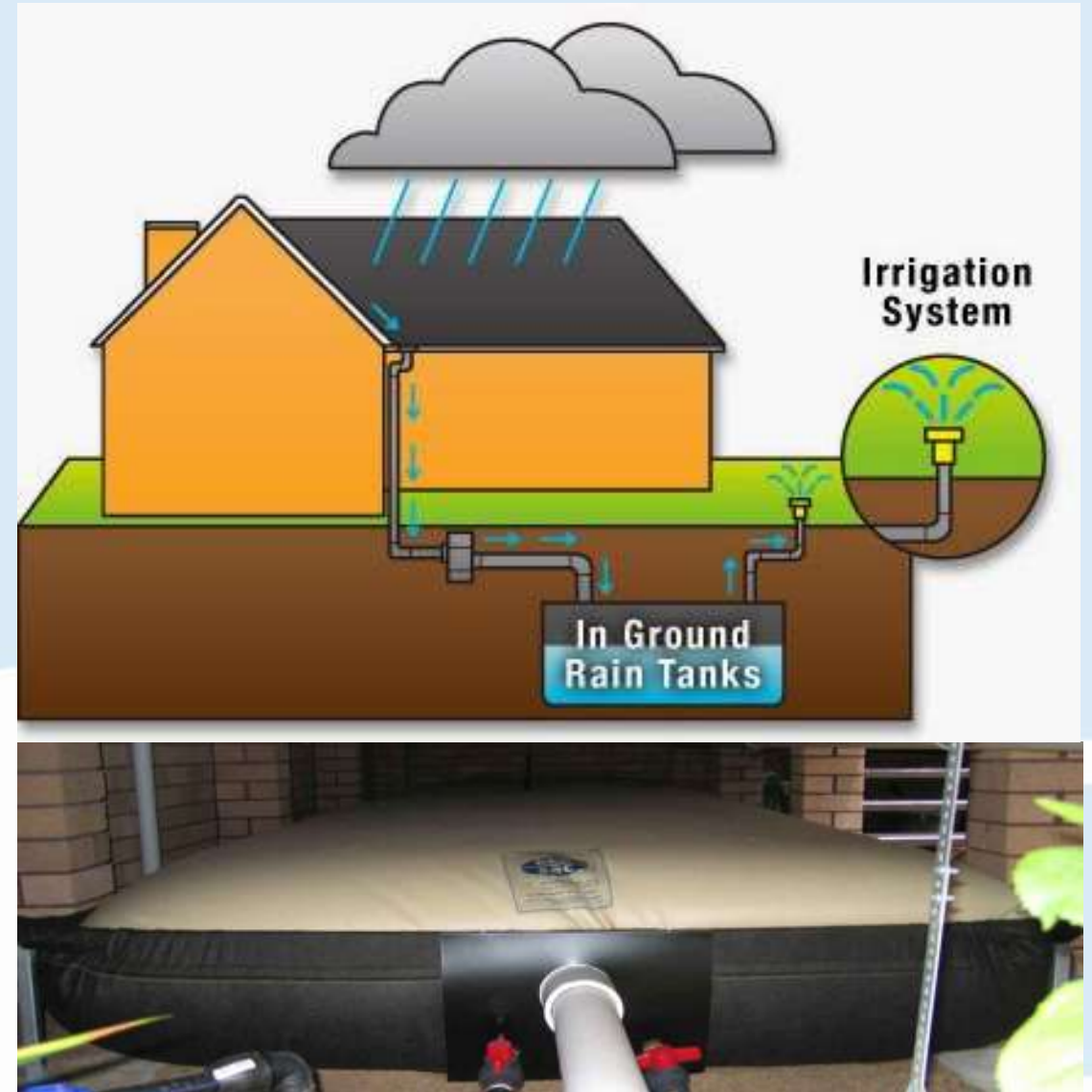


Source: [www.usgbc.org](http://www.usgbc.org)



# Helpful Tips

- Evaluate Goals
- Mow High
- Soil Health
  - Amendments
  - Existing conditions
- Wi-Fi Irrigation Controllers
- Rainwater Capture





# Wi-Fi Irrigation Controllers

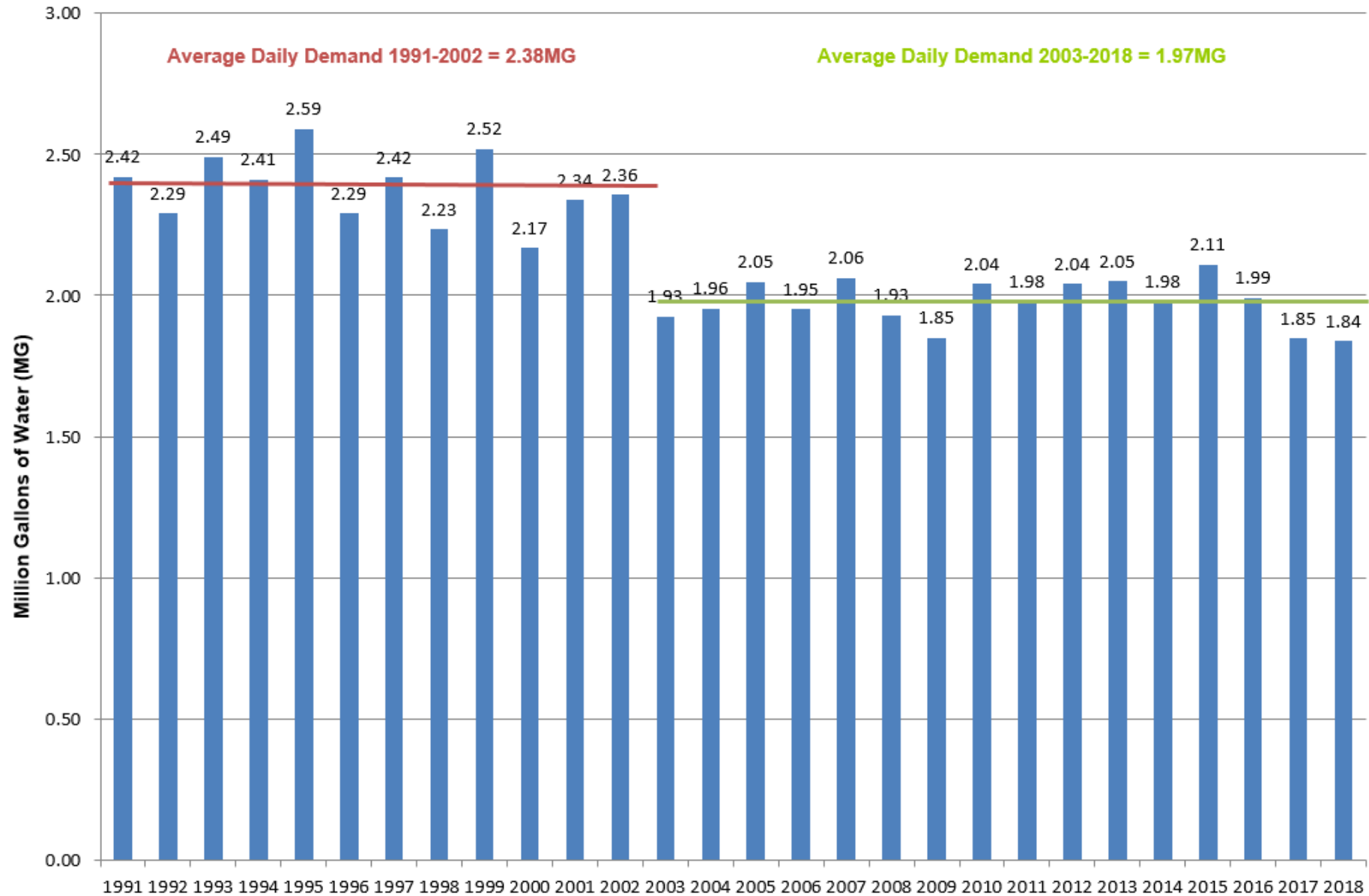


\*App available with LNK WiFi Module, sold separately.



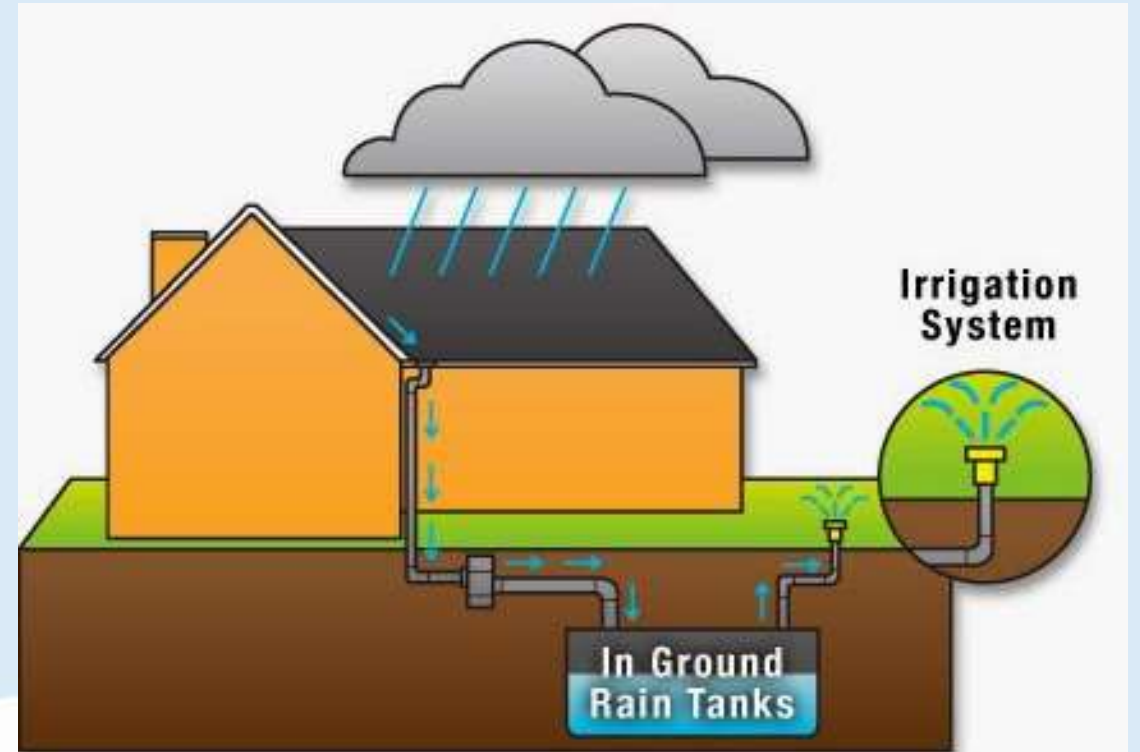
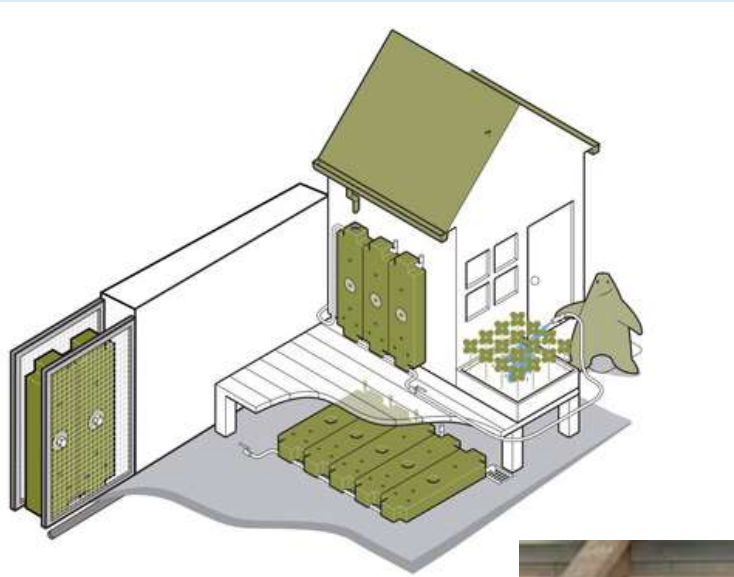


## Average Daily Water Demand





# Rainwater Capture





# WHY PLANT TREES?



[www.yourleaf.org](http://www.yourleaf.org) · 1-888-453-6504





INVASIVE SPECIES



# Asiatic Bittersweet





# Glossy Buckthorn





# Black Swallow-wort





# Garlic Mustard





# Invasive Honeysuckles





# Invasives Control Methods

- Mechanical
- Biological
- Grazing
- Chemical





# Native Alternatives to Invasives

Invasive burning bush



Native highbush cranberry



Native highbush blueberry





# Native Alternatives to Woody Invasives



Serviceberry  
(shadbush)



Chokeberry



Red twig dogwood



Winterberry



Spicebush swallowtail



Spicebush



Bayberry



Sweet pepperbush



New Jersey tea



# Native Alternatives to Herbaceous Invasives



Milkweeds



Clustered mountainmint



Bergamot (bee balm)



Anise hyssop



New England aster



Cardinal flower



Foxglove beardtongue



# Resources

- <https://concordma.gov/2108/Sustainability>
- [www.concordma.gov/conservation](http://www.concordma.gov/conservation)
- [www.concordma.gov/greenscapes](http://www.concordma.gov/greenscapes)
- [www.concordma.gov/760/Invasive-Species-in-Concord](http://www.concordma.gov/760/Invasive-Species-in-Concord)
- [www.gobotany.org](http://www.gobotany.org)
- [www.nativeplanttrust.org](http://www.nativeplanttrust.org)
- [www.xerces.org/pollinators-northeast-region](http://www.xerces.org/pollinators-northeast-region)
- [www.Audubon.org/native-plants](http://www.Audubon.org/native-plants)
- [www.grownativemass.org/resources/nurseries](http://www.grownativemass.org/resources/nurseries)
- [www.nrcs.usda.gov/Internet/FSE PLANTMATERIALS/publications/nypmctn11164.pdf](http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/nypmctn11164.pdf)



# Next Steps



Presentations made available



Handbook is in the works!  
Release in early 2020



Create network of Sustainable  
Gardeners in Concord?



# THANK YOU!!!

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